Computer Games May Be Good For Your Health: Shifting Healthcare Behavior Via Interactive Drama Videogames

Barry G. Silverman, PhD, Josh Mosley, MFA, Michael Johns, BS, Ransom Weaver, MA,
Melanie Green, PhD, John Holmes, PhD, Stephen Kimmel, MD, William Holmes, MD
University of Pennsylvania, Philadelphia, PA 19104 (barryg@seas.upenn.edu)

While health outcomes may at first appear to be biologically driven, very few appear to be completely mediated in this way. Virtually all outcomes have a behavioral component at some point in time. For example, many adverse health outcomes can be avoided by simple behavioral change (such as adjusting diet, increasing exercise, or quitting smoking), or by not engaging in high-risk behaviors in the first place. Other high risk outcomes are related to social issues such as peer pressure, attitude, etc. As a result, we may need to assess health education and promotion programs to determine their strengths and weaknesses and to explore new strategies. Our project was funded by NLM and NHAAP out of an interest in the latter.

There is increasing evidence that interactive learning systems have an important role in reducing health risks and improving general health status: e.g., see D. Lewis (*JAMIA*, 1999). From this meta-analysis, it is clear that computer-based patient education positively impacts many different dimensions of health and health care, including prevention, compliance, and patient selection of treatment options. While many systems surveyed in Lewis (1999) offer interactive environments, none of them use game simulation and virtual personas to engage the user. This is somewhat surprising since game simulators have achieved extraordinary popularity in the computer-based amusement market. The reason for their success is simple: they draw the user in, often with extensive and sophisticated graphics, realistic (yet fantastic) plots and themes, and engaging interface devices such as sound and emotion. In short, these simulators provide the user with a 'realistic' experience that seems somehow human in that it contains characters, or *virtual personas*, with whom the user can identify. Videogames afford characters you grow to care about, many of whom need to be shown how to do better in their potentially dysfunctional lives. The best selling game, The Sims, is an example of a game that draws its players into such exactly a role with its characters. If harnessed pedagogically, this is ideal since people learn a subject the best when they must teach it to others.

Our research is aimed at harnessing people's passions for videogames (and the movies), and a major purpose of this research is to explore alternative ways for a game generator to help authors to introduce entertainment and free play as well as learning by teaching into role playing games and interactive dramas that are behavioral interventions in disguise. To support this research, we are attempting to produce a cast of animated puppets and sets that they can be reused for many stories. Our ideas for reusable casts and archetypes follow from how they are used in franchise games, comics, and serials. We include characters of different ages, genders, and backgrounds/ethnicities, and in the roles of hero, sidekick, allies, opponents, tricksters, lovers, and so on. Also, our research on immersion and persuasion shows that many of the laity we are trying to affect are best influenced by cartoon format since they feel most confident about conquering messages when they are delivered in such worlds.

Heart Sense Game is our first videogame being designed with the help of our intervention game generator. Its goal is to help the player to overcome their own symptom recognition and resistive behavior issues before they have a heart attack themselves (or a loved one has one). The hope is that learning about these issues in a story world will help to reduce delay in seeking care if one ever encounters a heart attack in the real world. More explicitly, Heart Sense Game is a role-playing hero's tale in which you try to solve a crime and simultaneously rescue your career and win romance. However, some of the many characters you might get clues from, need your help to deal with heart attacks before they or others can help you. Since, for their own reasons, they often don't believe they are having a heart attack or don't want to take care of it promptly, there are significant obstacles to helping these characters to help themselves.

In testing to date, we placed a prototype before a focus group sent over by a local health clinic (N=17. Avg. Age = 60.5). From 75 to 80% of the focus group participants found it fun, worth playing again, and worth telling friends about, even though few had ever played videogames before. Also, focus group test results indicate the full multi-media and animated agent versions of the game provide improvement (relative to pamphlets or videos) in learner understanding and memory of symptoms, better appreciation of time management during heart attack events, and higher usability scores. The game is being finalized in Winter 2003 based on focus group lessons learned, and a randomized clinical trial involving about 200 subjects in four arms (traditional doctor's visit, watching videotapes, and 2 versions of interactive gaming) is being attempted during Spring 2003. Results will be summarized during our demo.